

# Honeywell v. Hamilton Sundstrand 1/8/01

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### Briefs and Other Related Documents

Only the Westlaw citation is currently available.

United States District Court, D. Delaware.

HONEYWELL INTERNATIONAL INC., and  
Honeywell Intellectual Properties, Inc., Plaintiffs,  
v.

HAMILTON SUNDSTRAND CORPORATION,  
Defendant.

No. Civ.A. 99-309 GMS.

Jan. 8, 2001.

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Defendant, of counsel.

### MEMORANDUM AND ORDER

SLEET, J.

\*1 Honeywell International Inc. ("Honeywell") filed this against Hamilton Sundstrand ("Sundstrand") in May of 1999 alleging that Hamilton Sundstrand Corporation ("Sundstrand") is infringing three Honeywell patents: the 4,380,893, 4,428,194 and the 4,337,615 ((the "'893 patent," "'194 patent," and the "'615 patent," respectively). The lawsuit relates to technology for auxiliary power units ("APU"). An APU is a small gas turbine engine, usually placed in the tail section of an airplane, that generates electricity for use while the aircraft is on the ground or in flight. An APU also provides compressed air for both starting the aircraft's main engine and environmental control of cabin air. Presently before the court is Sundstrand's Motion for Summary Judgment with regard to infringement and validity of Honeywell's '893 and '194 patents.

FN1. On January 2, 2001, Honeywell advised the court that it has decided to no

longer pursue its claims under the '615 patent.

### I. FACTS

Honeywell alleges that Sundstrand's APU, the APS 3200, infringes its '893 and '194 patents. Specifically, Honeywell contends that the APS 3200 literally infringes claim 4 of the '194 patent and that it infringes the remaining asserted claims of both patents under the doctrine of equivalents. The '893 and '194 patents claim an apparatus and method for a system to control the aerodynamic phenomenon called surge in a compressor. The '893 and '194 patents were issued in 1983 and 1984, respectively, from the same original application. The '893 patent specifically claims an apparatus that embodies the control logic for the surge control system. The '194 patent specifically claims the method of using the control logic.

In its motion, Sundstrand argues that its APS 3200 does not literally infringe claim 4 of the '194 patent and that it does not infringe the remaining asserted claims of either patent under the doctrine of equivalents. Furthermore, Sundstrand contends that the '893 and '194 patents are invalid because both patents were anticipated by the prior art. Specifically, Sundstrand alleges that Claim 4 of the '194 patent and Claims 1,12, 15, 19 and 23 of the '893 patent were anticipated by two articles. Sundstrand also argues that both the '893 and '194 patents are obvious in view of the prior art.

### II. STANDARD OF REVIEW

"Summary judgment is appropriate only when 'there is no genuine issue as to any material fact and ... the moving party is entitled to a judgment as a matter of law.'" Rodime v. SeagateTech, Inc., 174 F.3d 1294, 1301 (1999) (quoting Fed.R.Civ.P. 56(c)). In reviewing the motion, the court must draw all reasonable inferences in favor of the non-movant. See *id.* (citing Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 255 (1986)).

### III. DISCUSSION

#### A. Validity

First, Sundstrand argues that the '893 and '194 patents are invalid because 1) they were anticipated by prior art and 2) they are both obvious in light of prior art. Under 35 U.S.C. § 382, a patent is presumed valid and the party attacking the validity has the burden of proving invalidity by clear and convincing evidence. See 35 U.S.C. § 382 (1984). "Clear and convincing evidence is evidence which proves in the mind of the trier of fact an abiding conviction that the truth of [the] factual contentions [is] highly probable." See *Jack Frost Labs v. Physicians & Nurses Manu. Corp.*, 901 F.Supp. 718, 727 (S.D.N.Y.1995) (internal quotations omitted). Thus, Sundstrand must provide clear and convincing evidence that the '893 and '194 patents are invalid under either the doctrine of anticipation or obviousness before the court can grant summary judgment on these issues.

### 1. Anticipation

\*2 A claim is anticipated if each and every limitation is found either expressly or inherently in a single prior art reference. *Celeritas Techs., Ltd. v. Rockwell Int'l Corp.*, 150 F.3d 1354, 1361 (Fed.Cir.1998), cert. denied, 525 U.S. 1106 (1999). Accordingly, invalidity by anticipation requires that the four corners of a single, prior art document describe every element of the claimed invention, either expressly or inherently, such that a person of ordinary skill in the art could practice the invention without undue experimentation. *Advance Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed.Cir.2000). The prior art need not state the elements of the claim in identical language. See *Proctor & Gamble Co. v. Nabisco Brands, Inc.*, 711 F.Supp. 759, 762 (D.Del.1989). Anticipation is a question of fact. See *In re Graves*, 69 F.3d 1147, 1151 (Fed.Cir.1995).

After reviewing the prior art references cited by Sundstrand, it is not clear that these articles anticipated the inventions at issue. Honeywell has adduced sufficient facts to show that there are genuine issues of material fact in dispute for a jury to resolve. Specifically, the parties dispute whether each and every limitation is found either expressly or inherently in the prior art references. This dispute in particular should be considered by a jury. There is also a factual dispute as to whether a person of ordinary skill in the art could practice the invention based on the prior art reference. Because there are factual issues to be determined by a jury, the court will deny Sundstrand's motion for summary judgment

on the issue of invalidity due to anticipation by prior art.

### 2. Obviousness

Section 103 prohibits the granting of a patent "if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. § 103(a) (1984). The ultimate determination of whether an invention would have been obvious under 35 U.S.C. § 103(a) is a legal conclusion based on underlying findings of fact. *In re Kotzab*, 217 F.3d 1365, 1369 (Fed.Cir.2000). To determine the question of obviousness, the court should look to: (1) the scope and content of the prior art; (2) the differences between the prior art and the claims; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *Riverwood Int'l corp. v. The Mead Corp.*, 212 F.3d 1365, 1366 (Fed.Cir.2000) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966)). "Such secondary considerations as commercial success, long felt but unsolved needs, [and] failure of others [to invent] are also relevant to the obviousness inquiry." *Ryko Manu. Corp. v. Nu-Star, Inc.*, 950 F.2d 714, 716 (Fed.Cir.1991) (internal quotations omitted).

Obviousness may not be established using hindsight. See *Kahn v. General Motors Corp.*, 135 F.3d 1472, 1479 (Fed.Cir.1998). In determining obviousness, the invention must be considered as a whole and the claims must be considered in their entirety. *Id.* at 1479-80. Moreover, when obviousness is based on a combination of two or more particular prior art references, there must be a showing of a suggestion or motivation to combine the teachings of those references, though it need not be expressly stated. *Riverwood* at 1366. The ultimate determination of obviousness is a question of law based on underlying factual determinations. *Para-Ordnance Manufacturing Inc. v. SGS Importers Int'l Inc.*, 73 F.3d 1085, 1088 (Fed.Cir.1995).

\*3 After considering the submissions of the parties, the court will also deny summary judgment on the issue of obviousness because there are outstanding factual disputes that should be resolved by a jury. For example, Honeywell disputes Sundstrand's description of the scope and content of the prior art. Honeywell also disagrees with Sundstrand as to the differences between the prior art references cited and the claims at issue. Moreover, Sundstrand does not

present sufficient evidence as to the level of ordinary skill in the art and the objective evidence of nonobviousness. Finally, Honeywell alleges that there are secondary factors that the court should consider that would render its invention non-obvious. Thus, the court will deny Sundstrand's motion for summary judgment as to the issue of the obviousness of the '893 and '194 patents because Honeywell has adduced sufficient evidence to show that there is a genuine issue of material fact for a jury.

### B. Infringement

Literal infringement of a claim occurs when every limitation recited in the claim appears in the accused device, i.e., when "the properly construed claim reads on the accused device exactly." KJC Corp. v. Kinetic Concepts, Inc., 223 F.3d 1351, 1358 (Fed.Cir.2000). A device that does not literally infringe a claim may nonetheless infringe under the doctrine of equivalents if every element in the claim is literally or equivalently present in the accused device. Sage Products, Inc. v. Devon Indus., Inc., 126 F.3d 1420, 1423 (Fed.Cir.1997). A claim element is equivalently present in an accused device if only "insubstantial differences" distinguish the missing claim element from the corresponding aspects of the accused device. *Id.* Determinations of infringement, whether literal or under the doctrine of equivalents, is a factual matter normally reserved for a fact finder. See Tate Access Floors, Inc. v. Maxcess Techs. Inc., 222 F.3d 958, 964 (Fed.Cir.2000).

#### 1. Literal Infringement of Claim 4 of the '194 patent

First, the court will deny summary judgment as to literal infringement of Claim 4 of the '194 patent because Honeywell has managed to adduce facts which preclude the court from ruling in Sundstrand's favor as a matter of law on this issue. In particular, Honeywell has provided evidence demonstrating that there is a genuine factual dispute as to whether every element of Claim 4 of the '194 patent is embodied in Sundstrand's APS 3200. See *Honeywell's Opposing Brief*, D.I. 129, at 10-12.

#### 2. The Doctrine of Equivalents and Prosecution History Estoppel Analysis

In its submissions, Sundstrand argues that Honeywell cannot maintain its claims for infringement under the doctrine of equivalents in

light of the Federal Circuit's decision in Festo Corp. v. Kinzoku Kogyu Kabushiki Co., 2000 WL 1753646 (Fed.Cir. Nov. 29, 2000)(*en banc*). In *Festo*, the Federal Circuit held that:

FN2. Pursuant to Local Rule 7.1.2(c), Sundstrand sent a letter to the court advising it of new Federal Circuit case law on December 6, 2000.

When a claim amendment creates prosecution history estoppel with regard to a claim element, there is no range of equivalents available for the amended claim element. Application of the doctrine of equivalents to the claim element is completely barred (a "complete bar").

\*4 *Id.* at \*9. In rejecting precedent, the *Festo* court reasoned that "[a] complete bar, unlike a flexible bar, thus lends certainty to the process of determining the scope of protection afforded by a patent. *Id.* at \*17. Thus, "once an element of a claim is narrowed by amendment for a reason related to patentability, that element's scope of coverage will not extend beyond its literal terms." *Id.*

Sundstrand contends that for each of the surge control patent claims at issue (other than claim 4 of the '194 patent), Honeywell is barred by prosecution history estoppel from asserting a claim for infringement under the doctrine of equivalents. Specifically, Sundstrand argues that during the prosecution of the '893 and '194 patents, the PTO Examiner rejected all of the claims that did not include the key element at issue based on the prior art and stated that he would only allow dependent claims that included this key element if rewritten into independent form. Sundstrand claims that based on this rejection, Honeywell amended its claims to incorporate the element at issue into the independent claims and canceled the original claims that lacked this element. Thus, Sundstrand contends, that when Honeywell amended its claims to rely on this key element to overcome the prior art, it created prosecution history estoppel. Thus, Sundstrand now argues that prosecution history estoppel now applies regarding the inlet guide vane position element.

Honeywell argues that the claims at issue were not rejected based on prior art. Instead, Honeywell contends that the patent examiner "objected" to these claims as written. Honeywell further claims that the patent examiner did allow these claims, however, if they were "rewritten in independent form." Thus, according to Honeywell, the key element at issue was

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not amended during prosecution of the patents and the *Festo* decision would not apply to this case.

"Prosecution history estoppel precludes a patentee from obtaining under the doctrine of equivalents coverage of subject matter that has been relinquished during the prosecution of its patent application." *Festo*, 2000 WL 1753646, \*3 (Fed.Cir. Nov. 29, 2000) (quoting *Pharmacia & Upjohn Co. v. Mylan Pharms., Inc.*, 170 F.3d 1373, 1376 (Fed.Cir.1999)). In other words, "[t]he essence of prosecution history estoppel is that a patentee should not be able to obtain, through the doctrine of equivalents, coverage of subject matter that was relinquished during prosecution to procure issuance of the patent." *Hoganas AB v. Dresser Indus., Inc.*, 9 F.3d 948, 952 (Fed.Cir.1993) (citation omitted). "The logic of prosecution history estoppel is that the patentee, during prosecution, has created a record that fairly notifies the public that the patentee has surrendered the right to claim particular matter as within the reach of the patent." *Festo*, at \*3. In fact, the *Festo* court describes the functions of prosecution history estoppel as preserving the notice function performed by the claims and preventing patent holders from recapturing under the doctrine of equivalents subject matter that was surrendered before the Patent Office. *See id.* at \*6. Whether prosecution history bars an assertion of infringement under the doctrine of equivalents is a matter of law for the court to decide. *See Festo* at \*26. This decision can be made on a dispositive pretrial motion or at the close of evidence after a jury verdict. *See id.*

\*5 In order to determine if prosecution history estoppel will apply, the court must first determine which claim elements are alleged to be met by equivalents. *See Festo*, 2000 WL 1753646, at \*27 ("The first step in a prosecution history estoppel analysis is to determine which claim elements are alleged to be met by equivalents."). In this case, the claim elements at issue involve "adjusting the set point in response to variations in the position of the inlet guide vanes" and the "delta P over" flow related parameter. *See Honeywell's Opposing Brief*, D.I. 129, at 16-22.

Then, the court must determine whether the elements at issue were amended during prosecution of the patent. *Festo*, 2000 WL 1753646, at \*27. "If they were not, amendment-based estoppel will not bar the application of the doctrine of equivalents." *Id.* "However, the court still may need to consider whether statements made during prosecution give rise to argument-based estoppel." *Id.* If the claim

elements at issue were amended, the court first must determine whether the amendment narrowed the literal scope of the claim. *Id.* If so, prosecution history estoppel will apply unless the patent holder establishes that the amendment was made for a purpose unrelated to patentability. *Id.* If the patent holder fails to do so, prosecution history estoppel will bar the application of the doctrine of equivalents to that claim element. *Id.*

In this case, the parties dispute whether the elements at issue were actually amended. Thus, in order to resolve the dispute, the court must engage in a detailed review of the relevant prosecution history.

#### a. '893 Patent Prosecution History

When the '893 file application was filed, 52 claims were presented. *See '893 File History*, D.I. 138, at Ex. 9. The patent examiner initially determined that claims 41-52 were materially distinct from claims 1-40. *Id.* After an initial telephone conversation on this issue on August 27, 1982, the patentee withdrew claims 41-52 from consideration (subsequently, these claims were submitted in the application for the '194 patent). *Id.* Of the remaining claims, claims 1, 6, 11, 16, 21 and 32 were independent claims. The rest were dependent claims. *Id.*

Next, the patent examiner rejected claims 1-5, 11-15, and 21-40 for indefiniteness under 35 U.S.C. § 112. *Id.* Claims 28, 31, 34 and 37 were deemed ambiguous. *Id.* The following claims were rejected based on the prior art: 1-3, 6, 7, 10-13, 16, 19-22, 27-29, 32, 37, 38, 39 and 40. *Id.* In rejecting these claims, the examiner made specific reference to the relevant prior art and the reason for rejection relating to each claim. *Id.* Thus, the only claims remaining were claims 8, 9, 17 and 18. All of these claims were dependent claims. Claims 8, 9, 17 and 18 involve the claim elements at issue in this case. The examiner objected to these claims because of their form, but stated that they would be "allowed if rewritten in independent form." *Id.*

#### b. '194 Patent Prosecution History

\*6 As discussed above, claims 41-52 of the original '893 application were submitted to the patent office. Of these claims, only 41, 48, and 52 were independent claims. *See id.* The patent examiner rejected claims 41-43, 44, 45, 48, 49 and 52 based on the prior art. *Id.* at Ex. 11. Only claims 46, 47, 50 and

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51 remained. *Id.* Again, all of these claims were dependent claims and involved the claim elements at issue in this case. *Id.* Again, the examiner objected to these claims because of their form, but stated that they would be "allowed if rewritten in independent form." *Id.*

After reviewing the prosecution history, the court concludes that the elements at issue were not amended, and thus, prosecution history estoppel will not apply to this case. *See Festo*, at \*27. Sundstrand argues that by cancelling broader claims that lacked the inlet guide vane position element and advancing only claims that included the element, Honeywell created the "classic basis" for prosecution history estoppel. D.I. 179. Thus, Sundstrand argues that a claim need not be rejected for prosecution history estoppel to apply. To support its position, Sundstrand cites to *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 681 (Fed.Cir.1988) and *Builders Concrete, Inc. v. Bremerton Concrete Products Co.*, 757 F.2d 255, 260 (Fed.Cir.1985). Although this argument has superficial appeal, the court is not persuaded that prosecution history estoppel applies in this case.

FN3. Although there are two elements at issue in this case, the parties only argue about the inlet guide vane element in their papers. Despite this omission in their papers, the court's analysis also applies to the "delta P over" flow related parameter element.

The key distinction between the present case and the cases cited by Sundstrand is that the patentees in those cases surrendered the elements at issue when they resubmitted their claims. For example, in *Diversitech*, the claim at issue also had not been substantively amended and was initially dependent on a broader claim that was rejected. *Id.* at 681. The patentee in that case, however, expressly made arguments before the PTO that surrendered the element at issue. *Id.* Thus, because "[t]he Board rejected and [the patentee] cancelled the only claims that were broad enough to encompass his disclosed embodiment of a pad with a thin layer of cement on the bottom," the patentee could not "now contradict the representations it made in order to obtain the allowed claims." *Id.*

Again, in *Builder's Concrete*, there was also no amendment to the claim at issue during prosecution. *See id.* at 260. It was still clear, however, that arguments made for the patentability of a different claim, claim 1, relinquished the elements at issue in

that case. *See id.* "The fact that the 'passage' clause of patent claim 10 was not itself amended during prosecution does not mean that it can be extended by the doctrine of equivalents to cover the precise subject matter that was relinquished in order to obtain allowance of claim 1." *Id.*

In this case, Honeywell did not surrender the elements at issue during the prosecution of the patents at issue. "When an accused device is the same as a disclosed embodiment, and claims covering the disclosed embodiment were rejected on appeal and cancelled, the yielded claim scope can not be recovered in order to encompass the accused device through the doctrine of equivalents." *Diversitech*, 850 F.2d at 681. Honeywell did not give up an embodiment of the invention with the inlet guide vane. In fact, this element was essentially all that was allowed. The patent examiner rejected substantially all of the original claims based on the prior art. However, the remaining dependent claims would be allowed if rewritten into independent form. Since the examiner had rejected all of the other claims, these claims had to be rewritten because they would no longer make sense as written in dependent form. In this case, the elements at issue were not surrendered at all. Prosecution history estoppel does not apply. Thus, in accordance with *Festo*, this court rules as a matter of law that Honeywell may attempt to convince the jury that Sundstrand's APU 3200 infringes under the doctrine of equivalents. *See Festo* at \*26 (advising the court to rule as a matter of law on a pretrial dispositive motion whether prosecution history bars an assertion of infringement under the doctrine of equivalents).

\*7 As to the issue of infringement under the doctrine of equivalents, Honeywell has managed to adduce facts that create a genuine dispute over whether there is a substantial difference between the APS 3200 and claims 1-5, 8-15, 19, 22 and 23 of the '893 patent and claim 1 of the '194 patent. Because the court concludes that prosecution history estoppel does not apply here, and there are genuine issues of material fact in dispute, the court cannot rule as a matter of law that Sundstrand's APS 3200 does not infringe Honeywell's patents under the doctrine of equivalents.

For these reasons, IT IS HEREBY ORDERED that:

1. Hamilton Sundstrand's Motion for Summary Judgment with regard to infringement and validity of Honeywell's '893 and '194 patents (D.I. 103) is DENIED.

2. Honeywell is not barred by prosecution history estoppel from maintaining its claim of infringement of the '893 and '194 patents under the doctrine of equivalents.

D.Del.,2001.

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- [2001 WL 34889110](#) () Deposition of Dennis A. Staats New York, New York (Jan. 11, 2001)

END OF DOCUMENT

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United States District Court, N.D. California.  
BIO-RAD LABORATORIES, INC., Plaintiff,  
v.

APPLERA CORPORATION, et al., Defendants.  
No. C 02-05946JW.

Aug. 12, 2005.

David Leon Bilsker, Howrey, Simon, Arnold & White, San Francisco, CA, Bobby A. Ghajar, Howrey, Simon, Arnold & White, Los Angeles, CA, Tracy Jolles Holland, Round Rock, TX, Wallace W. Wu, Howrey, Simon, Arnold & White LLP, Menlo Park, CA, Thomas C. Mavrakakis, Winston & Strawn, San Francisco, CA, for Plaintiff.

Matthew D. Powers, Vernon M. Winters, Eugene Y. Mar, Jeffrey G. Homrig, Pat W. Costello, Weil, Gotshal & Manges LLP, Redwood Shores, CA, Alice Garber, Kirkland & Ellis LLP, San Francisco, CA, for Defendants.

ORDER GRANTING PARTIAL SUMMARY  
JUDGMENT

WARE, J.

*I. INTRODUCTION*

\*1 This is a patent dispute. Plaintiff, Bio-Rad Laboratories, Inc. ("Bio-Rad"), owns United States Patent No. 5,089,111 ("111 patent") and asserts that certain products made by Defendant, Applera Corporation ("Applera"), infringe one or more claims of the '111 patent.

The motion presently before the Court is for partial summary judgment. Applera requests partial summary judgment that the chemical, polyacrylamide, is not an equivalent to "a substantially linear polymer selected from the group consisting of methyl cellulose, hydroxypropyl methyl cellulose, hydroxyethyl methyl cellulose, and hydroxybutyl methyl cellulose." '111 patent, 12:22-25. Applera argues that Bio-Rad, is estopped from asserting infringement by the doctrine of equivalents because Bio-Rad made a narrowing amendment to its claims in response to a rejection based on patentability. Bio-Rad disputes Applera's Motion and

maintains that its amendment does not preclude it from asserting infringement by the doctrine of equivalents.

The Court held oral argument on November 29, 2004. The parties, with this Court's approval, stipulated to multiple stays proceedings, including staying a decision on Applera's Motion for Partial Summary Judgment. On March 2, 2005, the Court conducted a case management conference. The parties then informed the Court that they were no longer in settlement negotiations, and thus, requested the Court to proceed with its decision on the pending motion. Based on all of the submissions and arguments to date, the Court GRANTS Applera's Motion for Partial Summary Judgment.

*II. BACKGROUND*

Bio-Rad filed U.S. Patent Application No. 07/303,174 ("174 application") with the United States Patent and Trademark Office (the "PTO") on January 27, 1989. The '174 application initially contained 27 claims and was entitled, "Electrophoretic Sieving in Gel-Free Media with Dissolved Polymers." Initially filed claims 1 and 27 were the only independent claims. Of these 27 initially filed claims, initially filed claim 1 and initially filed claim 27 are relevant to this discussion.

Initially filed claim 1 of the '174 application read as follows:

1. A method of separating a mixture of sample ions of varying molecular weights in a sample into components, said method comprising electrophoretically passing said sample through a separation column containing a gel-free aqueous solution of a substantially linear polymer having a molecular weight of about 10,000 to about 2,000,000, said molecular weight being within a range of about 0.1 to about 200 times the average molecular weight of said macromolecular species in said mixture, the concentration of said polymer in said solution being sufficient to retard the flow of said species through said separation column to degrees which vary with the molecular weights of said species.

Garber Decl., Exh. 1, ABBR065864. Initially filed claim 27 of the '174 application read as follows: 27. A method of separating a mixture of polynucleotide

chains in a sample, said polynucleotide chains each containing from about 10 to 10,000 base pairs, said method comprising electrophoretically passing said sample through a capillary column containing a gel-free aqueous solution of a substantially linear polymer selected from the group consisting of methyl cellulose, hydroxypropyl methyl cellulose, hydroxyethyl methyl cellulose, and hydroxybutyl methyl cellulose, said polymer characterized in terms of the viscosity of a 2% aqueous solution thereof being within a range of about 1,000 centipoise to about 10,000 centipoise at 25 °C, and the concentration of said polymer in said solution is from about 0.1% to about 0.5% by weight.

\*2 *Id.* at ABBR065868.

The PTO examiner rejected initially filed claims 1-13 of the '174 application as obvious under 35 U.S.C. § 103 in light of the Tietz, *et al.*, *Electrophoresis in Uncrosslinked Polyacrylamide Molecular Sieving and its Potential Applications*, Electrophoresis, 7 1986, 217-220 ("Tietz") and Bode, *SDS-Polyethyleneglycol Electrophoresis: A Possible Alternative to SDSPolyacrylamide Ge Electrophoresis*, FEBS Lettes, 65(1) (1976) at 56-58 ("Bode"). The examiner stated that because Tietz "successfully performed molecular sieving experiments using non-crosslinked linear polyacrylamide" claims 1-13 would be obvious to the person having ordinary skill in the art. *Id.* at ABBR065889. In the same office action, the examiner allowed initially filed claim 27 without comment.

In response to the office action, Bio-Rad amended initially filed claim 1 to read:

1. A method of separating a mixture of sample ions of varying molecular weights in a sample into components, said method comprising electrophoretically passing said sample through a separation column containing a gel-free aqueous solution of a substantially linear water-soluble cellulose derivative polymer having a molecular weight of about 10,000 to about 2,000,000, said molecular weight being within a range of about 0.1 to about 200 times the average molecular weight of said sample ions [macromolecular species] in said mixture, the concentration of said polymer in said solution being sufficient to retard the flow of said species through said separation column to degrees which vary with the molecular weights of said species.

*Id.* at ABBR065894-95 (double underlined text

indicates addition; bracketed text indicates deletion) (amendment indicia in original). Initially filed claim 27 was unchanged. After Bio-Rad's amendment to initially filed claim 1, the PTO examiner issued a Notice of Allowability.

Following the Notice of Allowability Bio-Rad abandoned the '174 application in favor of a Continuation-in-Part application ("CIP"). Notably, the CIP retained the title of the '174 application, an amended version of initially filed claim 1, and the original version of initially filed claim 27. The CIP issued as the '111 patent on February 18, 1992.

Amended claim 1 of the abandoned '174 application was again altered in the newly filed CIP. Claim 1 of the CIP read:

1. A method of separating a mixture of sample ions of varying molecular weights in a sample into components, said method comprising electrophoretically passing said sample through a separation column containing a gel-free aqueous solution of a water-soluble polymer selected from the group consisting of cellulose derivatives, saccharide-based and substituted saccharide-based polymers, polysilanes, polyvinylalcohol and polyvinylpyrrolidone, said polymer having a molecular weight of about 10,000 to about 2,000,000, said molecular weight being within a range of about 0.1 to about 200 times the average molecular weight of said sample ions in said mixture, the concentration of said polymer in said solution being sufficient to retard the flow of said species through said separation column to degrees which vary with the molecular weights of said species.

\*3 *Id.* at ABBR065950. Initially filed claim 27 from the '174 application was retained, unchanged, as claim 16 of the CIP. The PTO issued a Notice of Allowability for the CIP without any rejections.

However, the PTO included a Statement of Reasons with its Notice of Allowability. The Statement of Reasons recognized that no prior art taught or fairly suggested practicing the method of separating a mixture of sample ions described in claim 1 or claim 16 of the CIP application. Garber Decl., Exh. 3, ABBR065974-75. The examiner recited claims 1 and 16 of the CIP application and underlined the (1) "electrophoretically passing" and (2) "said molecular weight being within a range of about 0.1 to about 200 times the average molecular weight of said sample ions in said mixture" language of claim 1. *Id.* The examiner also underlined the (1) "the group consisting of methyl cellulose, hydroxypropyl

methyl, hydroxyethyl methyl cellulose, and hydroxybutyl methyl cellulose,” (2) “the viscosity of a 2% aqueous solution thereof being within a range of about 1,000 centipoise to about 10,000 centipoise at 25 °C,” and (3) “the concentration of said polymer in said solution is from about 0.1% to about 0.5% by weight” language of claim 16. *Id.* Bio-Rad made no comment on the examiner's Statement of Reasons and the '111 patent issued from the CIP application.

Bio-Rad filed the present lawsuit against Applera on December 26, 2002. Applera manufactures various performance optimized polymers (“POP”) that are used for molecular sieving. Applera's POP products contain polydimethylacrylamide (“PDMA”) and combinations of PDMA and polyacrylamide. Bio-Rad claims that the polyacrylamide and PDMA in Applera's POP products represent equivalents to claim 16 of the '111 patent. Thus, according to Bio-Rad, Applera's POP products infringe claim 16 of the '111 patent.

Applera counters that prosecution history estoppel precludes Bio-Rad from asserting the doctrine of equivalents against Applera's polyacrylamide-containing POP products. Applera asserts that Bio-Rad's amendment to initially filed claim 1 in the '174 application was to overcome a rejection related to patentability. Applera notes that initially filed claim 27 contained the same objectionable limitation as initially filed claim 1, that is, “a gel-free aqueous solution of a substantially linear polymer.” Applera argues, however, that the PTO allowed initially filed claim 27 without amendment because initially filed claim 27 was limited on its face to a discrete group of chemicals not including polyacrylamide. Thus, Applera asks the Court to find that Bio-Rad's amendment to initially filed claim 1 should also preclude the assertion of infringement against Applera's polyacrylamide-containing POP products by doctrine of equivalents as to initially filed claim 27, now claim 16 of the '111 patent.

### III. STANDARDS

Summary judgment is proper “if the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to judgment as a matter of law.” *Fed.R.Civ.P.* 56(c). The non-moving party “must set forth specific facts showing that there is a genuine issue for trial.” *Fed.R.Civ.P.* 56(e). To preclude the entry of

summary judgment, the non-moving party must bring forth material facts, i.e., “facts that might affect the outcome of the suit under the governing law ... Factual disputes that are irrelevant or unnecessary will not be counted.” *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 247-48, 106 S.Ct. 2505, 91 L.Ed.2d 202 (1986).

\*4 The construction of patent claims is a question of law for the Court. *See Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 384, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). Likewise, the question of whether prosecution history estoppel applies is a matter of law for the Court to decide. *Glaxo Wellcome, Inc. v. Impax Laboratories, Inc.*, 356 F.3d 1348, 1351 (Fed.Cir.2004). As such, a question of prosecution history estoppel is properly decided on a motion for summary judgment. *Id.* The moving party “is entitled to summary judgment [on prosecution history estoppel] only if the facts and inferences, when viewed in the light most favorable to [the non-moving party], would not persuade a reasonable jury to return a verdict for ... the nonmoving party.” *Id.* (citing *Anderson*, 477 U.S. at 255).

“According to the Supreme Court in *Festo*, ‘a narrowing amendment made to satisfy any requirement of the Patent Act may give rise to an estoppel.’” *Glaxo*, 356 F.3d at 1351-52 (quoting *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 736, 122 S.Ct. 1831, 152 L.Ed.2d 944 (2002) (*Festo VIII*)). The estoppel is presumptive and may be rebutted if the patentee can show “[1] that the alleged equivalent could not reasonably have been described at the time the amendment was made, or [2] that the alleged equivalent was tangential to the purpose of the amendment, or [3] that the equivalent was not foreseeable (and thus not claimable) at the time of the amendment.” *Glaxo*, 356 F.3d at 1532 (citing *Festo VIII*, 535 U.S. at 740-41). An equivalent is foreseeable if the patentee can “show that at the time of the amendment one skilled in the art could not reasonably have been expected to have drafted a claim that would have literally encompassed the alleged equivalent.” *Festo VIII*, 535 U.S. at 733.

An amendment to one claim may “infect” another claim with estoppel. *Glaxo*, 356 F.3d at 1356. The Federal Circuit Court of Appeals (“FCCA”) has recognized “that subject matter surrendered via claim amendments during prosecution is also relinquished for other claims containing the same limitation.” *Id.* The “rule [ensures] consistent interpretation of the same claim terms in the same patent.” *Id.*

#### IV. DISCUSSION

Applera argues that Bio-Rad's amendment to the '174 application in response to the PTO's rejection of initially filed claims 1-13 triggers prosecution history estoppel as to claim 16 of the '111 patent. Bio-Rad counters that prosecution history estoppel should not apply to claim 16 of the '111 patent for several reasons. First, Bio-Rad argues that it overcomes any presumptive estoppel because the use of polyacrylamide would have been unforeseeable at the time of the amendment. Second, Bio-Rad argues that claim 16 of the '111 patent does not contain the same limitation as initially filed claim 1 and thus should not be infected by any estoppel applied to initially filed claim 1. Finally, Bio-Rad argues that amending initially filed claim 1, without more, does not link claim 16 of the '111 patent to initially filed claim 1 such that claim 16 should be subject to prosecution history estoppel.

##### A. Presumptive Prosecution History Estoppel

\*5 Bio-Rad amended the '174 application in response to the PTO examiner's obviousness rejection. Obviousness, under 35 U.S.C. § 103, is a rejection based on patentability under the Patent Act. *See Festo VIII*, 535 U.S. at 736. Bio-Rad's amendment to initially filed claim 1 changed the limitation "gel-free aqueous solution of a substantially linear polymer" to "gel-free aqueous solution of a substantially linear water-soluble cellulose derivative polymer." In both *Warner-Jenkinson* and *Festo VIII* the Supreme Court made "clear that a narrowing amendment may occur when either (1) a preexisting claim limitation is narrowed by amendment or (2) a new claim limitation is added by amendment." *Honeywell Intern. Inc. v. Hamilton Sundstrand Corp.*, 370 F.3d 1131, 1140 (Fed.Cir.2004)(citing *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 17, 30, 117 S.Ct. 1040, 137 L.Ed.2d 146 (1997), and *Festo VIII*, 535 U.S. at 728). The addition of "water-soluble cellulose derivative" narrowed initially filed claim 1. Thus, Bio-Rad's amendment of initially filed claim 1 was "a narrowing amendment made to satisfy [the non-obviousness] requirement of the Patent Act [and] may give rise to an estoppel." *Id.*

FN1. Applera contends that the examiner rejected initially filed claim 1 and not initially filed claim 27 because claim 27 was

limited to the members of its Markush group, none of which are polyacrylamide. Whereas initially filed claim 1 was limited only by a general description of the attributes of the claimed "substantially linear polymer." Applera cites the examiner's Statement of Reasons that issued with the Notice of Allowability for support of its position. Applera notes that the examiner drew particular attention to the Markush group in initially filed claim 27, now claim 16 and stated that even unamended, the claim avoided prior art references. Applera argues that the examiner's statements imply that the absence of polyacrylamide in the Markush group was the reason it avoided the prior art. The Court notes that initially filed claim 27 appears, on its face, more specific than initially filed claim 1.

Before determining whether Bio-Rad's amendment to initially filed claim 1 infects claim 16 of the '111 patent with prosecution history estoppel, the Court must determine whether prosecution history estoppel applies to initially filed claim 1 and whether Bio-Rad can overcome the presumption.

The effect of finding prosecution history estoppel is that the patentee presumptively surrenders his or her right to use the doctrine of equivalents to recapture "subject matter conceded during prosecution." *Honeywell*, 370 F.3d at 1141; *Glaxo*, 356 F.3d at 1351-52. Here, the PTO examiner rejected initially filed claim 1 because of prior art that "successfully performed molecular sieving experiments using non-crosslinked linear polyacrylamide." Garber Decl., Exh. 1, ABBR065889. In response, Bio-Rad gave up the more general limitation "gel-free aqueous solution of a substantially linear polymer," which includes polyacrylamide, for the more restrictive limitation "gel-free aqueous solution of a substantially linear water soluble cellulose derivative polymer," that does not include polyacrylamide. Thus, unless Bio-Rad can rebut the presumption, it is estopped from asserting that Applera's POP products infringe claim 1 of the '111 patent by way of the doctrine of equivalents.

FN2. Indeed, Bio-Rad does not assert that claim 1 of the '111 patent is infringed by Applera's polyacrylamide-containing POP products.

Bio-Rad argues that it overcomes any presumption of

estoppel with regard to polyacrylamide because the use of polyacrylamide and PDMA, as it is used in the allegedly infringing products, was unforeseeable at the time of Bio-Rad's amendment. If an "equivalent [was] unforeseeable at the time of the application ... the patentee can overcome the presumption that prosecution history estoppel bars a finding of equivalence." *Festo VIII*, 535 U.S. at 740-41. The FCCA has explained that:

\*6 if the alleged equivalent represents later-developed technology (e.g. transistors in relation to vacuum tubes, or Velcro® in relation to fasteners) or technology that was not known in the relevant art, then it would not have been foreseeable. In contrast, old technology, while not always foreseeable, would more likely have been foreseeable. Indeed, if the alleged equivalent were known in the prior art in the field of the invention, it certainly should have been foreseeable at the time of the amendment.

*Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 344 F.3d 1359, 1369 (Fed.Cir.2003) (*Festo IX*).

Bio-Rad argues that PDMA and polyacrylamide were not used in combination to electrophoretically separate ions until years after the '174 application was amended. Blanch Decl. ¶ 6. Bio-Rad also argues that the possibility of foreseeability is reduced because there were "well-known problems with using [polyacrylamide] in general as well as the inability to create the proper range of molecular weights for PDMA and mixtures of PDMA and polyacrylamide." Opposition, 18. Furthermore, Bio-Rad offers a list of mechanical problems, purity problems, manufacturing problems, toxicity problems, and implementation problems that it asserts would have made the use of PDMA or a combination of PDMA and polyacrylamide unforeseeable when initially filed claim 1 was amended.

This Court disagrees, however, that the use of PDMA or a combination of PDMA and polyacrylamide was sufficiently unforeseeable at the time of the amendment to overcome the presumption of estoppel. First, Bio-Rad's recitation of "well-known" problems with the use of polyacrylamide and PDMA does not necessarily suggest that it would have been unforeseeable at the time of the amendment that PDMA could represent an equivalent to the subject matter claimed in initially filed claim 1. Indeed, the fact that a chemical is difficult to manufacture or had not yet been used for the purpose claimed does not make it unforeseeable. Cf. *Festo IX*, 344 F.3d at 1369 (stating that transistors, in relation to vacuum tubes, represent an unforeseeable technology).

Second, the PTO examiner made his rejection based on prior art that used polyacrylamide in molecular sieving. Thus indicating that in drafting initially filed claim 1 with broad coverage of a "gel-free aqueous solution of a substantially linear polymer," coverage of acrylamides was not only foreseeable, but accomplished. Thus, the Court finds that "at the time of the amendment one skilled in the art could ... reasonably have been expected to have drafted a claim that would have literally encompassed the alleged equivalent." *Festo VIII*, 535 U.S. at 733. Accordingly, the amendment to initially filed claim 1 imposes a presumption of prosecution history estoppel, which Bio-Rad is unable to overcome on grounds of unforeseeability.

FN3. The Court ordered supplemental briefing on the issue of whether the accused polymers and Tietz's polyacrylamide are different. After reviewing the parties' submissions the Court is satisfied that the accused polymers are sufficiently similar to Tietz's. Accordingly, the rejection based on Tietz suggests that at the time of the amendment the drafter of the '111 patent could have drafted a claim that would have literally encompassed the accused products.

#### *B. Infectious Estoppel*

Applera argues that the amendment to initially filed claim 1 creates an estoppel that should be applied to initially filed claim 27, now claim 16 of the '111 patent. Bio-Rad contends that the estoppel should not be applied because the two claims do not contain the same limitation and there was no action by Bio-Rad in the course of the amendment that linked the claims in a way that requires the estoppel to be imposed on claim 16 of the '111 patent.

\*7 Although Bio-Rad only amended initially filed claim 1, the same limitation, "gel-free aqueous solution of a substantially linear polymer," was contained in initially filed claim 27. Garber Decl., Exh. 1, ABBR065864, ABBR065868. Bio-Rad argues that because initially filed claim 1 and initially filed claim 27 each claim different ionic separations the amendment to "claim 1 did not add the same limitation ... that is present in unamended claim 16." Opposition, 8. This argument, however, misses the point. Infectious estoppel is a mechanism employed to maintain the consistency of terms and limitations throughout a patent. *Glaxo*, 356 F.3d at 1356 (stating

that infectious estoppel is a “quest for consistency” among claim terms). Both claims as initially filed and at the time of the amendment shared identical language. Insofar as the terms shared by the claims present identical limitations, this Court sees no reason why the terms of the limitations would not have been construed alike. The two claims, although to different ionic separations, contained the same limitation. Thus, initially filed claim 27, now claim 16 of the '111 patent does “recite the amended term” and is subject to the same estoppel. *Id.*

Bio-Rad also argues that the estoppel does not apply to claim 16 of the '111 patent unless there exists “some additional basis in combination with the narrowing amendment that justify[es] infecting the unamended claim with the same estoppel and *Festo* presumption as the [claim] that [was] amended to include the same limitation.” Opposition, 12. Bio-Rad cites *Builders Concrete, Inc. v. Bremerton Concrete Prods. Co.*, 757 F.2d 255 (Fed.Cir.1985), for the proposition that prosecution history estoppel is not limited to amendment based estoppel, but may arise in other ways, like argument based estoppel. Bio-Rad then argues that the court in *Glaxo* relied on *Builders* and allowed the infectious estoppel because the patentee failed to respond to the examiner's argument that the amended limitation was critical to all claims. *Id.* (citing *Glaxo*, 356 F.3d at 1356.) Thus, according to Bio-Rad, both the amendment and the argument were necessary bases for applying the infectious estoppel.

This Court does not read *Glaxo* to require an additional basis in combination with a narrowing amendment before infecting an unamended claim with estoppel. Instead, it appears that the FCCA was more concerned with the consistent interpretation of claim limitations than adding prerequisites to the doctrine of prosecution history estoppel. See *Glaxo*, 356 F.3d at 1356 (“Thus, this court directs consistent interpretation of claim terms within a patent in view of the prosecution history.”); see also *Am. Permahedge, Inc. v. Barcana, Inc.*, 105 F.3d 1441, 1446 (Fed.Cir.1997) (stating that “identical claim terms used in different claims must be interpreted consistently” and “under the doctrine of equivalents, we see no reason to assign different ranges of equivalents for the identical term used in different claims in the same patent”). Although argument accompanying an amendment may indicate precisely what subject matter is surrendered, argument is not a necessary basis for applying estoppel to an unamended claim.

\*8 The Court finds that Bio-Rad is estopped from asserting that Applera's POP products containing polyacrylamide or PDMA are equivalents to, and thereby infringe, initially filed claim 27, now claim 16 of the '111 patent. Bio-Rad may not use claim 16 of the '111 patent to recover the subject matter it surrendered by amending initially filed claim 1.

#### V. CONCLUSION

For the reasons stated above the Court GRANTS Applera's Motion for Partial Summary Judgment.

N.D.Cal.,2005.

Bio-Rad Laboratories, Inc. v. Applera Corp.

Not Reported in F.Supp.2d, 2005 WL 2008020 (N.D.Cal.)

Briefs and Other Related Documents ([Back to top](#))

- [2006 WL 709363](#) (Trial Motion, Memorandum and Affidavit) Bio-Rad Laboratories, Inc.'s Opposition to Defendants' Motion for Summary Judgment on Trademark and Related Claims (Feb. 6, 2006)
- [2006 WL 728090](#) (Trial Motion, Memorandum and Affidavit) Bio-Rad Laboratories, Inc.'s Opposition to Applera's Motion for Summary Judgment of Invalidity of Claims 1 and 6 of the '111 Patent under 35 U.S.C. s 102(g) (Feb. 6, 2006)
- [5:02cv05946](#) (Docket) (Dec. 26, 2002)

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# Festo v. Shoketsu

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**H**Briefs and Other Related Documents

United States District Court, D. Massachusetts.  
 FESTO CORPORATION, Plaintiff,  
 v.  
 SHOKETSU KINZOKU KOGYO KABUSHIKI  
 CO., LTD. a/k/a SMC Corporation, and SMC  
 Pneumatics, Inc., Defendants.  
 No. Civ.A. 88-1814-PBS.

June 10, 2005.

Anthony E. Bennett, Charles R. Hoffmann, Glenn T. Henneberger, Hoffmann & Baron LLP, Syosset, NY, Grover S. Parnell, Jr., Finneran & Nicholson, P.C., Boston, MA, for Plaintiff.

Arthur I. Neustadt, Oblon, Spivak, McClelland, Maier & Neustadt, P.D., Alexandria, VA, James B. Lampert, Benjamin M. Stern, Wilmer Cutler Pickering Hale and Dorr LLP, Boston, MA, Norman F. Oblon, Oblon, Fisher, Spivak, McClelland, Arlington, VA, for Defendants.

## MEMORANDUM AND ORDER

## I. INTRODUCTION

SARIS, J.

\*1 Ten years after trial, and following two sojourns to the Supreme Court, this seventeen-year-old suit is back on remand from the Federal Circuit. The sole issue on remand is whether plaintiff Festo Corporation ("Festo") can rebut the presumption of surrender by establishing that two equivalents of defendant SMC's accused device would have been unforeseeable to one of ordinary skill in the art at the time of certain narrowing amendments to the application for the Stoll patent (United States Patent No. 4,354,125) held by Festo. The history of this case has been extensively reviewed in prior decisions and will not be repeated here. *See, e.g., Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 726-30, 122 S.Ct. 1831, 152 L.Ed.2d 944 (2002); *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 344 F.3d 1359, 1364-65 (Fed.Cir.2003).

Following a two-day bench trial, I find that both the

single sealing ring and the non-magnetizable aluminum sleeve in the accused SMC device would have been foreseeable to one of ordinary skill in the art at the time of the narrowing amendments, that is November 1981. Because Festo has not rebutted the presumption of surrender for these asserted equivalents, it has not proven patent infringement under the doctrine of equivalents. The Court enters judgment for defendant.

FN1. The only witnesses at trial on remand were Festo's experts Dr. Barry Wolf, a Ph.D. in mechanical engineering and a professor of mechanical engineering at New York University; and Dr. John Schroeder, a Ph.D. in physics and a magnetic properties expert. SMC introduced no expert testimony, but instead relied on statements made by Festo's experts at earlier proceedings as well as cross-examination to undermine Festo's position.

## II. FINDINGS OF FACT

The Court presents here only those facts relevant to the issues on remand.

## A. Festo Device

Festo holds United States Patent No. 4,354,125 ("the '125 patent") of inventor Dr. Kurt Stoll entitled "Magnetically Coupled Arrangement for a Driving and Driven Member" ("the Festo device"). The Festo device includes a linear motor having a piston (also called a driving member), a cylinder (also called a tube or tubular part), and a driven member (also called a driven assembly or follower). '125 patent, col. 1, ll. 48-56. (*See Wolf Direct at 3.*) The piston is encircled by magnets and is driven along the inside of the cylinder by pressure applied at one end. '125 patent, col. 3, ll. 20-24; *id.* at col. 2, ll. 13-22. The driven member is external to the cylinder and contains magnets that are coupled by magnetic force to the piston magnets. *See id.* at col. 1, ll. 53-58; *id.* at col. 3, ll. 16-17. The "sleeve" is the element that surrounds the magnets on the driven member. *Id.* at col. 2, ll. 23-26; *id.* at col. 3, ll. 60-63. (Tr. at 11.) Thus, the driven member, which is not mechanically attached to the piston, is driven along the outside of

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the cylinder by the movement of the piston. Wherever the piston goes, the follower follows. (Tr. at 8.) This magnetically coupled rodless cylinder "has many industrial uses" in conveying systems and "has been employed in machinery as diverse as sewing equipment and the Thunder Mountain ride at Disney World." Festo, 535 U.S. at 728.

FN2. The other Festo patent at issue in earlier proceedings in this case, United States Patent No. 3,779,401 ("the Carroll patent"), is not at issue on remand. (See Tr. at 2/157-58.)

FN3. Festo submitted written direct testimony of Dr. Wolf and Dr. Schroeder prior to the trial on remand.

The '125 patent explains that the air gap between the magnets on the piston and the magnets on the driven member is kept "as small as possible" to maintain a strong coupling force. '125 patent, col. 1, l. 26; see id. at col. 4, ll. 16-29. This distance relates to the thickness of the cylinder. As the patent explains, "[T]he tubular part ... should preferably have thin walls in order to ensure a small total air gap between the two magnet arrangements". Id. at col. 1, l. 68-col. 2, l. 1; see also id. at col. 3, ll. 6-7 ("a relatively thin-walled and narrow tube").

\*2 The Festo device includes guide rings at each end of the piston. Id. at col. 2, l. 5; id. at col. 3, ll. 24-30; id. at col. 5, l. 38. The purpose of the guide rings is to facilitate the movement of the piston through the cylinder by preventing the magnets on the piston from engaging the wall of the cylinder. (Tr. at 18-19.) The guide rings also serve to wipe impurities from the inside surface of the cylinder. (Id. at 18-19, 2/14, 2/16-19.)

In 1981, Dr. Stoll amended his patent application for the Festo device and added two limitations. See Festo, 535 U.S. at 728 (describing limitations). The first limitation was a pair of sealing rings, one at each end of the piston. '125 patent, col. 5, l. 37. The purpose of the sealing rings is to prevent impurities from penetrating the space between the piston and the cylinder. Id. at col. 3, ll. 43-55. (Tr. at 18-19.) Like the guide rings, the sealing rings also serve to wipe impurities from the inside surface of the cylinder. '125 patent, col. 3, ll. 43-55. (Tr. at 18-19.)

FN4. Courts have previously noted that each

of the Festo sealing rings has a lip on one side, creating a seal in one direction. See Festo, 535 U.S. at 728 ("that the inventions contain a pair of sealing rings, each having a lip on one side"); Festo, 344 F.3d at 1372 ("Festo argues that SMC's two-way sealing ring was an inferior and unforeseeable equivalent of the *one-way sealing rings* located at each end of the piston in the claimed invention." (emphasis added)). This design is not specified in the '125 patent.

The sealing rings on the piston align with the wiping rings on the driven member in the same plane perpendicular to the axis of the tube. '125 patent, col. 6, ll. 24-27; see id. at col. 1, ll. 63-65 ("Preferably the wiping means of the driven assembly and the sealing means of the piston lie in the same plane transversal to the axis of the tubular part."). (See Tr. at 20.) This alignment prevents "torsional deforming moments" that could result from relatively strong magnets causing the piston and driven member to pinch a relatively thin cylinder and deform it as the piston and driven member travel its length. See '125 patent, col. 1, l. 63-col. 2, l. 2. (Tr. at 20-25.)

Torsional deforming moments may also be avoided by use of a relatively thicker cylinder. (Tr. at 39, 2/12, 2/31.) The '125 patent does not define the exact thickness of the cylinder in the Festo device. Moreover, Festo presented no empirical evidence on remand regarding the thickness of the cylinder in the Festo device. (See Tr. at 2/22.)

FN5. "THE COURT: Have you done experiments on the Stoll invention to see what would happen if you just used the one sealing ring? THE WITNESS: Well, you see, you really can't, and the reason you can't is because there's no specification in the patent." (Tr. at 39 (Testimony of Dr. Wolf).)

The second limitation to the '125 patent added in the 1981 amendments was that the sleeve on the driven member be made of magnetizable material. '125 patent, col. 6, ll. 2-3; see Festo, 535 U.S. at 728 (describing limitations). The purpose of a magnetizable sleeve is to shield against magnetic leakage fields. '125 patent, col. 2, ll. 24-28. On a device such as the Festo device, significant magnetic leakage fields could cause undesirable braking forces due to the magnetic attraction between the device and proximate metallic machine parts. Id. (Tr. at 42-43,

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79, 2/52-53.) The '125 patent explains:

If the driven assembly is provided with a sleeve made of a magnetisable material, which encircles the hollow cylindrical assembly of the magnet arrangement, magnetic leakage fields in the vicinity of the driven assembly can be kept to a minimum. In this way, undesirable braking forces, which would otherwise be generated while piston and driven assembly pass magnetisable machine components, are avoided.

\*3 '125 patent, col. 2, ll. 23-30.

Whereas minimal magnetic leakage fields do not cause braking forces (Tr. at 2/126-27), significant magnetic leakage fields in the Festo device would have required its re-design (*Id.* at 2/111). There was no empirical evidence at trial on remand as to the strength of any magnetic leakage fields from the Festo device. (*See id.* at 93-94, 2/55-56, 2/130.) However, the Festo device was designed to minimize magnetic leakage fields. (*Id.* at 2/102-03, 2/110, 2/113.)

The prior art for the Festo device includes German patent 27 37 924 ("the German patent") for an earlier rodless cylinder ("the German device") that Dr. Stoll invented in 1977. (Tr. at 50-58; *see* Def. Ex. 7 (English translation of the German patent).) Significantly, unlike the Festo device, the German device uses only one sealing ring (an "o-ring") that seals equally well from both sides. (Tr. at 52, 111, 2/22.) Additionally, the driven member in the German device has a non-magnetizable sleeve. (*Id.* at 55-58; Def. Ex. 7 at SA22089.)

FN6. "Q. But there's no question that this is a prior art patent that shows a non-magnetizable material? A. That's correct...." (Tr. at 58 (Testimony of Dr. Wolf).)

#### B. SMC Device

The SMC device is also a magnetically coupled rodless cylinder, composed of a piston, a cylinder, and a driven member. (Wolf Direct at 11.) However, unlike the Festo device, the SMC device employs only one two-way sealing ring instead of two sealing rings. *See Festo*, 535 U.S. at 729. It also has a guide ring on each end. (Tr. at 32-33.) Moreover, the sleeve on the SMC driven member is made of a non-magnetizable aluminum alloy. (*See id.*) Aluminum alloy was a known material in 1981 and has some capability for shielding magnetic fields, although that

capability was unknown at the time of the amendments to the Festo device patent application. (*Id.* at 2/86-87.) At trial on remand, Festo presented no empirical evidence as to the type of magnets used in the SMC device, the strength of those magnets, or the thickness of the SMC cylinder. (*Id.* at 2/22, 2/39, 2/80.)

FN7. Initially, SMC had a four-ring system identical to Festo's, but it changed to the ring system at issue after Festo's assertion of infringement. The jury found that the SMC device infringed the Stoll patent under the doctrine of equivalents.

### III. CONCLUSIONS OF LAW

#### A. Standards of Review

In *Festo*, 535 U.S. 722, 122 S.Ct. 1831, 152 L.Ed.2d 944, the Supreme Court reexamined two patent concepts, the doctrine of equivalents and the rule of prosecution history estoppel. Adopting a "flexible bar," the Supreme Court described the analytical framework for these concepts as follows:

Just as [*Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 17, 117 S.Ct. 1040, 137 L.Ed.2d 146 (1997);] held that the patentee bears the burden of proving that an amendment was not made for a reason that would give rise to estoppel, we hold here that the patentee should bear the burden of showing that the amendment does not surrender the particular equivalent in question.... The patentee, as the author of the claim language, may be expected to draft claims encompassing readily known equivalents. A patentee's decision to narrow his claims through amendment may be presumed to be a general disclaimer of the territory between the original claim and the amended claim. [*Exhibit Supply Co. v. Ace Patents Corp.*, 315 U.S. 126, 136-37, 62 S.Ct. 513, 86 L.Ed. 736 (1942)] ("By the amendment [the patentee] recognized and emphasized the difference between the two phrases and proclaimed his abandonment of all that is embraced in that difference"). There are some cases, however, where the amendment cannot reasonably be viewed as surrendering a particular equivalent. The equivalent may have been unforeseeable at the time of the application; the rationale underlying the amendment may bear no more than a tangential relation to the equivalent in question; or there may be some other reason suggesting that the patentee could not reasonably be expected to have described the

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insubstantial substitute in question. In those cases the patentee can overcome the presumption that prosecution history estoppel bars a finding of equivalence.

\*4 This presumption is not, then, just the complete bar by another name. Rather, it reflects the fact that the interpretation of the patent must begin with its literal claims, and the prosecution history is relevant to construing those claims. When the patentee has chosen to narrow a claim, courts may presume the amended text was composed with awareness of this rule and that the territory surrendered is not an equivalent of the territory claimed. In those instances, however, the patentee still might rebut the presumption that estoppel bars a claim of equivalence. The patentee must show that at the time of the amendment one skilled in the art could not reasonably be expected to have drafted a claim that would have literally encompassed the alleged equivalent.

*Id.* at 740-41. Because the amendments in this case were made for a reason relating to patentability, the Supreme Court added: “[T]he question is not whether estoppel applies but what territory the amendments surrendered. While estoppel does not effect a complete bar, the question remains whether petitioner can demonstrate that the narrowing amendments did not surrender the particular equivalents at issue. On these questions, SMC may well prevail, for the sealing rings and the composition of the sleeve both were noted expressly in the prosecution history.

*Id.* at 741-42. The case was then remanded for further proceedings in the Court of Appeals or the District Court.

On remand, the Federal Circuit held that Festo could not rebut the presumption of surrender for either accused equivalent under the “tangential relation” or “some other reason” criteria. *Festo*, 344 F.3d at 1371-72 (discussing sleeve); *id.* at 1373 (discussing sealing ring). The court held, however, that “[f]actual issues ... exist as to whether an ordinarily skilled artisan would have thought an aluminum sleeve to be an unforeseeable equivalent of a magnetizable sleeve.” *Id.* at 1371. Similarly, the Federal Circuit concluded, “Factual issues ... exist as to whether a person of ordinary skill in the art would have considered the accused two-way sealing ring to be an unforeseeable equivalent of the recited pair of sealing rings.” *Id.* at 1372. “[R]ebuttal of the presumption of surrender is a question of law,” *id.* at 1367, that “may be subject to underlying facts” properly decided by the court, not a jury, *id.* at 1368 n. 3. Thus, the Federal Circuit

remanded the case “to the district court to determine whether Festo can rebut the presumption of surrender by establishing that the equivalents in question would have been unforeseeable to one of ordinary skill in the art at the time of the amendments.” *Id.* at 1364; see also *Festo*, 535 U.S. at 740 (“[T]he patentee should bear the burden of showing that the amendment does not surrender the particular equivalent in question.”). The Court may “hear expert testimony and consider other extrinsic evidence relating to the relevant factual inquiries.” *Festo*, 344 F.3d at 1369.

\*5 The Federal Circuit defined unforeseeability as “an objective inquiry”:

Usually, if the alleged equivalent represents later-developed technology (e.g., transistors in relation to vacuum tubes, or Velcro® in relation to fasteners) or technology that was not known in the relevant art, then it would not have been foreseeable. In contrast, old technology, while not always foreseeable, would more likely have been foreseeable. Indeed, if the alleged equivalent were known in the prior art in the field of the invention, it certainly should have been foreseeable at the time of the amendment. By its very nature, objective unforeseeability depends on underlying factual issues relating to, for example, the state of the art and the understanding of a hypothetical person of ordinary skill in the art at the time of the amendment.

*Id.* (internal citation omitted). These underlying factual issues are examined “in the context of the invention.” *Id.* at 1371 (“Factual issues thus exist as to whether an ordinarily skilled artisan would have thought an aluminum sleeve to be an unforeseeable equivalent of a magnetizable sleeve *in the context of the invention.*” (emphasis added)).

The Federal Circuit clarified that the relevant time for evaluating unforeseeability is when the narrowing amendment was made. *Id.* at 1365 n. 2. The amendments at issue occurred in 1981. According to Festo’s un rebutted evidence, one of ordinary skill in the art in 1981 would be a person having a degree in mechanical engineering and/or several years of experience in developing fluid driven mechanical devices. (Wolf Direct at 12; Schroeder Direct at 10.)

### B. Sealing Ring

The issue on remand is the objective unforeseeability of a single two-way sealing ring. The German device employed a single sealing ring that sealed in both

directions. (Tr. at 52, 111, 2/22.) Therefore, as Festo's expert conceded at trial on remand, a single sealing ring does not constitute "later-developed technology" as the Federal Circuit described it. *See Festo*, 344 F.3d at 1369 ("transistors in relation to vacuum tubes, or Velcro® in relation to fasteners").

FN8. "It turns out that ... large-gap rodless cylinders were available at that time, but that was old technology." (Tr. at 35 (Testimony of Dr. Wolf).)

Moreover, the use of a single sealing ring was "known in the relevant art" at the time of the 1981 amendments. *See id.* The German patent constitutes relevant art for the design of sealing rings in the Festo device because the basic purpose of the sealing ring in both devices is the same. *Cf. Bancorp Servs., L.L.C. v. Hartford Life Ins. Co.*, 359 F.3d 1367, 1375 (Fed.Cir.2004) ("In determining the relevant art for purposes of addressing issues of patent validity, the court must look to the nature of the problem confronting the inventor."); *In re Clay*, 966 F.2d 656, 658-59 (Fed.Cir.1992) ("Two criteria have evolved for determining whether prior art is analogous [for purposes of determining obviousness]: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved."). Because a single sealing ring was "known in the prior art in the field of the invention, it certainly should have been foreseeable." *Festo*, 344 F.3d at 1369.

\*6 Festo argues that the German patent is beyond the "context of the invention" of the '125 patent, *see id.* at 1371, because the German device is a "large gap" device. (Tr. at 111-12.) Specifically, Festo contends that use of a single sealing ring would have been unforeseeable in a "small gap" device because a "small gap" device, unlike the German device, requires a second sealing ring to prevent torsional deforming moments caused by the large magnetic coupling forces. (*Id.* at 112, 2/13.) Festo points out that the only other "small gap" rodless cylinder existing at the time of the amendments was shown in United States Patent No. 4,488,477 ("the '477 patent") owned by SMC, which discloses a symmetric system or rings (i.e., a sealing ring and guide ring on each end of the piston) to accomplish the wiping, guiding, and sealing functions as well as to avoid undesirable torsional deforming moments on

the thin-walled tube. (Wolf Direct at 13-14.) Therefore, Festo argues, there was no teaching regarding the use of an asymmetric ring arrangement, in the context of the Festo device, available to a person of ordinary skill in the art at the time of the 1981 amendments.

FN9. "The context of the invention is the following: [Stoll] knows he needs large coupling forces. He would like to keep this gap as small as possible. In order to have a very small gap, he has to have a very, very thin tube. It turns out that he was aware that if he had this thin tube, it would deform. He needed the sealing ring there to back up against the wiping ring on the driven member to prevent the deformation. That's the context of the invention, a very, very thin tube, because otherwise he wouldn't be doing what he's trying to do, which is to get large coupling forces." (Tr. at 112 (Testimony of Dr. Wolf).)

The viability of this argument depends on the distinction between "large gap" and "small gap" devices. However, Festo presented no empirical evidence on remand regarding the size of the respective gaps in the Festo device or the German device, or more specifically, the thickness of the cylinders in the two devices. (Tr. at 2/22.) Although Festo contends that such evidence is irrelevant because the '125 patent teaches that the context of the invention is a gap "as small as possible," objective foreseeability analysis does not hinge on the terms of the patent itself. With no empirical evidence to distinguish between a "large gap" and "small gap" device, the single sealing ring in the prior art German patent is strong evidence that use of a single sealing ring would have been foreseeable, in the context of the Festo device, to one of ordinary skill in the art at the time of the 1981 amendments.

FN10. "Q. Do you know how thick the walls of the tubes in Festo's commercial product are? A. No, I don't, and it doesn't matter. Q. Do you know how thick the wall of the tubes in SMC's commercial products are? A. No, I don't, and it doesn't matter." (Tr. at 2/22 (Testimony of Dr. Wolf).)

Moreover, as Festo's experts themselves testified, the use of two sealing rings is not the only means to prevent torsional deforming moments. Torsional

deforming moments could be avoided by use of a relatively thicker cylinder wall. (*Id.* at 39, 2/12, 2/31.) Again, Festo argues that any increase in cylinder thickness would be outside the context of the '125 patent because of the need for a cylinder "as thin as possible" to maintain strong coupling forces. However, there was no evidence at trial on remand regarding how much thicker a cylinder would have to be, relative to the Festo device cylinder, to prevent torsional deforming moments. Likewise, there was no evidence regarding the rate at which increasing the thickness of a cylinder decreases the strength of the coupling forces. Thus, Festo has not proven that use of a wall thick enough to prevent deformation would have been outside the context of the invention at the time of amendment, and therefore, has not proven that use of a single sealing ring would have been unforeseeable in the context of the invention.

FN11. "THE COURT: Have you done experiments with how thin or thick a wall would have to be to only go with one sealing ring, whether that would affect the coupling between the magnets? THE WITNESS: Well, there are actually so many variables, you really can't do experiments." (Tr. at 40 (Testimony of Dr. Wolf).)

\*7 Festo has also failed to prove why a single sealing ring was unforeseeable at the time of the 1981 amendments but a viable option in the SMC device. Festo argues that developments in magnet technology enabled the use of a single sealing ring in the later-invented SMC device. Festo contends that SMC achieved strong coupling forces despite using a thicker cylinder (which did not require a second sealing ring to prevent torsional deforming moments) because stronger magnets were developed after the 1981 amendments. (*See id.* at 39, 2/11-12, 2/34.)

However, Festo presented no empirical evidence to support this argument. Festo presented no evidence regarding the type of magnets in the SMC device or the strength of those magnets, either independently or relative to the magnets in the Festo device. (*See id.* at 2/52, 2/77, 2/80, 2/88.) Festo also presented no measurements of the thickness of the SMC cylinder. (*See id.* at 2/22, 2/39.) Festo's only evidence regarding what changed between the 1981 amendments and the SMC device is expert assertions that the SMC cylinder is "much thicker" than the Festo cylinder and that the SMC magnets are "much stronger" than the Festo magnets. (*Id.* at 2/34-35.) Without testing or quantification, this testimony is

insufficient to meet Festo's burden of proving the accused SMC device's single sealing ring unforeseeable. Dr. Wolf was not persuasive in his testimony that a two-way sealing ring would have rendered the Festo device a failure. (*See id.* at 2/31-33.) Indeed, he testified to the contrary in the 1994 trial. (*See id.* at 2/16 ("In fact the [Stoll] patent says that a single ring is good enough.").)

FN12. Dr. Wolf's testimony did not clarify the ambiguity: "You know, the word 'thicker' is a funny word. Thicker, we don't mean a foot." (Tr. at 2/35.)

The fact that a single sealing ring may have been considered objectively inferior in a "small gap" device in 1981 is also insufficient to meet Festo's burden. *See Festo*, 344 F.3d at 1373. "[I]f the patentees knew of an inferior design and chose not to include it within the claims, then it cannot be said that they could not have been expected to describe that design." *Id.* Therefore, Festo has not met its burden of proving the use of a single sealing ring objectively unforeseeable.

#### C. Sleeve

Non-magnetizable aluminum alloy was known and available at the time of the amendments to the '125 patent application. *See Festo*, 344 F.3d at 1371 ("[I]t seems unlikely that an aluminum sleeve would have been unforeseeable, as it was made of a commonly available metal...."). Significantly, Stoll's German patent device used a non-magnetizable sleeve. (Def. Ex. 7 at SA22089; Tr. at 55-58.) Thus, like a single sealing ring, a non-magnetizable sleeve does not, in itself, constitute "later-developed technology," *see Festo*, 344 F.3d at 1369, and was "known in the relevant art," *see id.*

Festo argues that a non-magnetizable sleeve was unforeseeable because the '125 patent teaches the need to shield against magnetic leakage fields, and any shielding capability of non-magnetizable aluminum alloy was unknown in 1981. As Dr. Schroeder testified, if one wants to prevent a magnetic field from attracting a nearby metallic object, the magnetic field lines must be channeled using a magnetizable material. (*See Tr.* at 2/66-68.) There is no dispute that magnetizable material shields against leakage fields, that significant leakage fields could cause undesirable braking forces, and that any shielding capability of non-magnetizable aluminum

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alloy was unknown in the literature or to one of ordinary skill in 1981. If significant leakage fields were a concern in the context of the invention at the time of the amendments, a non-magnetizable aluminum alloy sleeve, which provided no known shielding, would not have been a foreseeable equivalent of a magnetizable sleeve.

FN13. "The context of the invention is that you want to provide shielding to prevent the braking forces." (Tr. at 92 (Testimony of Dr. Wolf).)

\*8 However, Festo has not proven that significant leakage fields, and therefore shielding, were an objective concern in the context of the invention at the time of the amendments. Festo emphasizes that leakage fields were a concern to Dr. Stoll and that the '125 patent teaches the need for shielding. Dr. Schroeder testified, "The small gap device, you want to concentrate the magnetic field lines in the gap to give you strong coupling forces, but the behavior of magnetic field lines is such that you cannot avoid leakage fields." (*Id.* at 2/114). However, Festo presented no empirical evidence as to the strength of leakage fields in the Festo device. Festo never measured the leakage fields for a Festo rodless cylinder without the sleeve. (*Id.* at 2/130.) Moreover, Dr. Schroeder testified that the Festo device is designed to minimize leakage fields. (*Id.* at 2/102-03, 2/110, 2/113.) If there had been significant leakage fields, according to Festo's expert, Festo would have had to redesign the whole device. (*Id.* at 2/111.)

Significantly, there was evidence that Stoll knew that the Festo device did not "need a magnetizable sleeve because [the] leakage field is very small." (*Id.* at 84; see *id.* at 82-83, 2/115.) Moreover, the '125 patent describes the shielding benefit of a magnetizable sleeve as beneficial but not necessary to the operation of the device. It states that "[i]f a magnetizable sleeve is used, then 'magnetic leakage fields in the vicinity of the driven assembly can be kept to a minimum.'" '125 patent, col. 2, ll. 23-27. The terms of the patent itself therefore suggest that a non-magnetizable sleeve was foreseeable because the magnetic fields are already minimized by the design of the device.

Festo is left with the argument that a non-magnetizable sleeve would have been unforeseeable at the time of the 1981 amendments because one of ordinary skill in the art would have provided shielding, and therefore a magnetizable sleeve, as a

matter of course. However, as SMC points out, Festo not only submitted its original claim in the United States (and claims in seven foreign countries) that encompassed the non-magnetizable sleeve, but also advocated that the magnetizable limitation was an "unintentional limitation[ ] added incorrectly by an attorney." (Def. Ex. 8 at SA22506.) The evidence that the Festo device, even without a magnetizable sleeve, was designed to minimize leakage fields indicates that use of a non-magnetizable sleeve was foreseeable. The evidence suggests that a person of ordinary skill in the art, at most, would have considered a device with a non-magnetizable sleeve inferior. However, as with the single sealing ring, inferiority does not equate with unforeseeability. Cf. *Festo*, 344 F.3d at 1372 (Festo's "inferior" argument "suggests that Stoll could have described an aluminum sleeve but chose not to do so because that 'inferior' element was not a part of his invention.").

#### D. Conclusion

\*9 This case has had as many twists and turns and ups and downs as the Thunder Mountain amusement park ride it facilitated. Both sides, unfortunately, had to bear extensive litigation costs as the ground rules changed. Nonetheless, the (hopefully) final question before this Court is quite narrow.

Because both the single sealing ring and non-magnetizable sleeve were foreseeable to a person of ordinary skill in the art at the time of the 1981 amendments, Festo is unable to rebut the presumption of surrender of those two elements. See *Festo*, 344 F.3d at 1374. Therefore, "prosecution history estoppel bars Festo from relying on the doctrine of equivalents" for its claim that the SMC device infringes the '125 patent. *Id.* Because the jury at the first trial in this case found that the SMC device infringed the '125 patent based on the doctrine of equivalents, *id.* at 1364, that finding is vacated.

#### V. ORDER

The Court orders entry of judgment for defendant SMC on plaintiff's claim of infringement of United States Patent No. 4,354,125.

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Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.

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